

# Corrosion Prevention and Control Database

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ASETSDefense 2011



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# Network Vision

There exists a wealth of information regarding:

- Coating system corrosion rates in service environments
- Incidence of corrosion-related failures and corresponding criticality
- Repair/Replacement and Remediation costs for affected systems
- Emerging research and technology

Combined and served to USMC Program Managers and Design Engineers this could lead to alternative solutions to current issues and prevention of future issues. Potential benefits are:

- Improved component or systemic performance
- Lowered total ownership cost
- Increased asset availability and/or
- Improved safety for the warfighter.





# Initial Steps

Create a comprehensive document repository (database) of all CPAC-generated deliverables

- USMC and Joint-Service Acquisition Systems – Corrosion Prevention Control Plan (CPCP) and the full supporting documentation
- Research & Development to support
  - Acquisition Systems
  - Maintenance personnel
    - » Depot Level: MCLBs (Albany and Barstow)
    - » Middle Level: Corrosion Repair Facilities (CRFs)
    - » Field Level: Corrosion Service Teams (CSTs)
  - DoD-wide applications (OSD Research projects)

Join the CPAC database with the ASETSDefense Surface Engineering Database (SED) to present program managers and designers with additional information with which to make their design and implementation decisions

# CPAC Database Overview



**Purpose:** The database is intended for two classes of users: decision-makers (engineers and program managers) and for field personnel (CSTs, CRFs and depot level personnel).

- **Decision-makers:**

- Provide as much data as possible to make an informed decision, while the project is still in the developmental stage, yielding a high ROI
- A large body of previously completed work can be leveraged, if we can connect the disparate data and present it in a meaningful format
- The challenge will be in the establishment of proper communications and the conversion to and from expected data formats

- **Field operatives:**

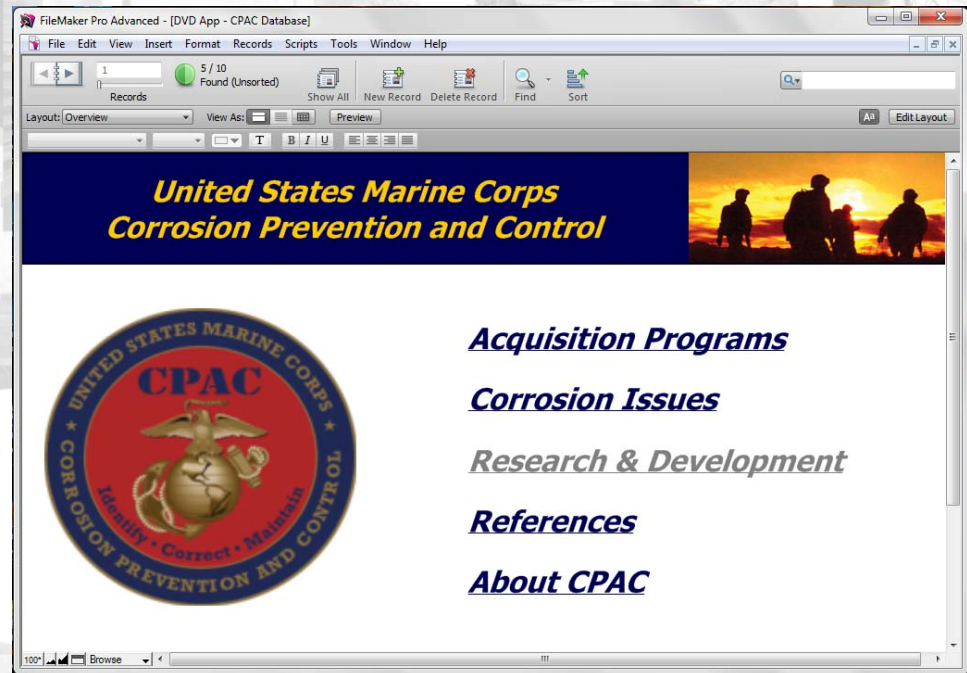
- A resource where all documents relevant to their work can be referenced
- Ensure that all personnel have access to the same specifications and procedures, promoting uniformity across different sites
- Uniformity will enhance predictability, making the engineer's work more effective



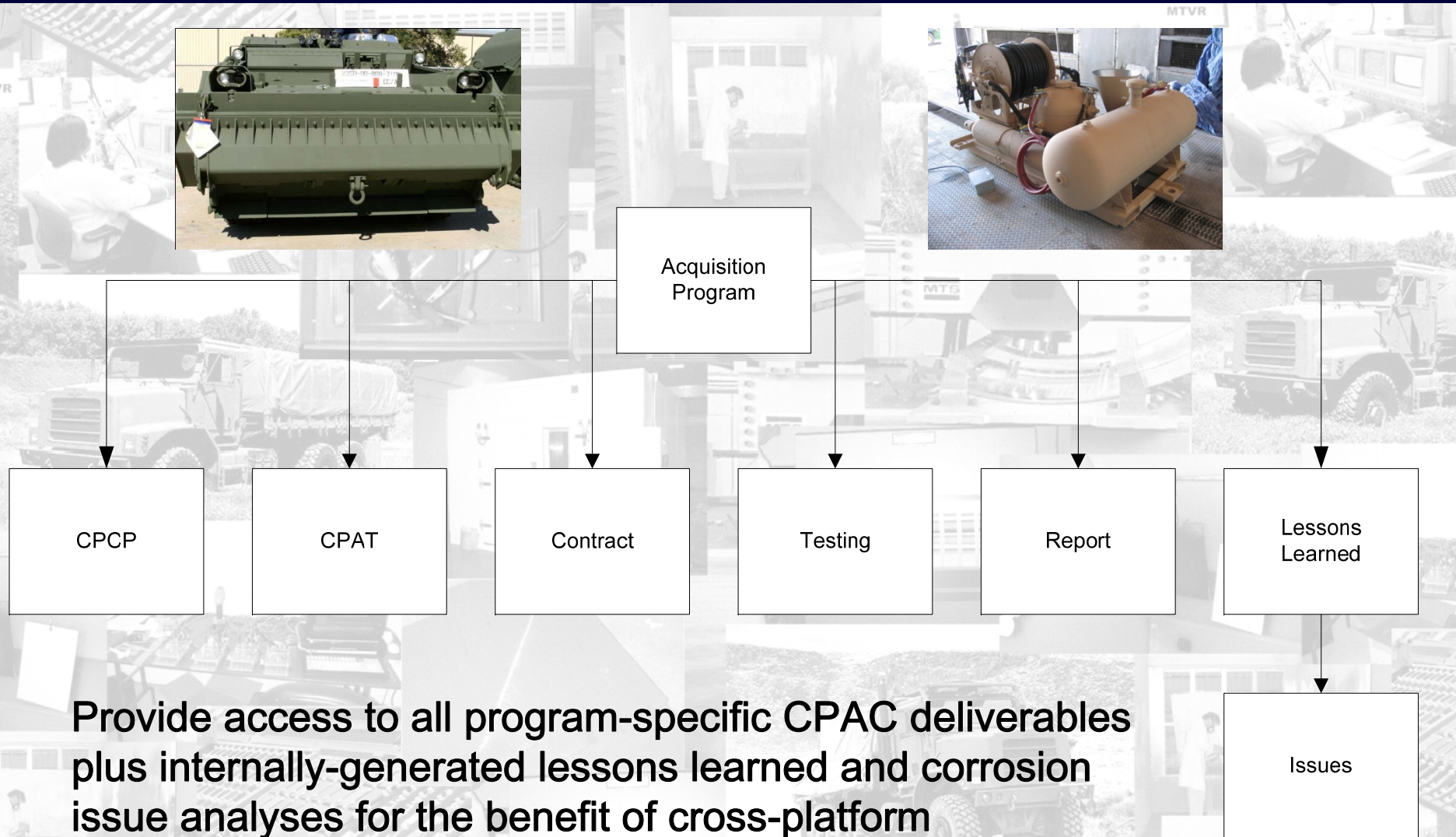
# CPAC Database & User Interface



- Written in FileMaker Pro 11, a cross-platform (Windows or Mac) application
- The database can be “wrapped” as an application, with an interface that looks and feels like a webpage
- Interface should be extremely user-friendly and intuitive
- Where actions are not obvious, text will be added for the benefit of the user
- The executable can be loaded onto a DVD and distributed per military regulations and per PM-CPAC’s discretion
- Personnel without internet access will be able to reference documents required to perform their function.



# Acquisition Systems Data Structure



Provide access to all program-specific CPAC deliverables plus internally-generated lessons learned and corrosion issue analyses for the benefit of cross-platform evaluations



# Research & Development Data Structure



R & D

Testing

Material

Process

Provide access to the full documentation and testing history of a research project, as it pertains to CPAC

Lab Test Plan

Intermediate  
Lab  
Report

Final  
Lab  
Report

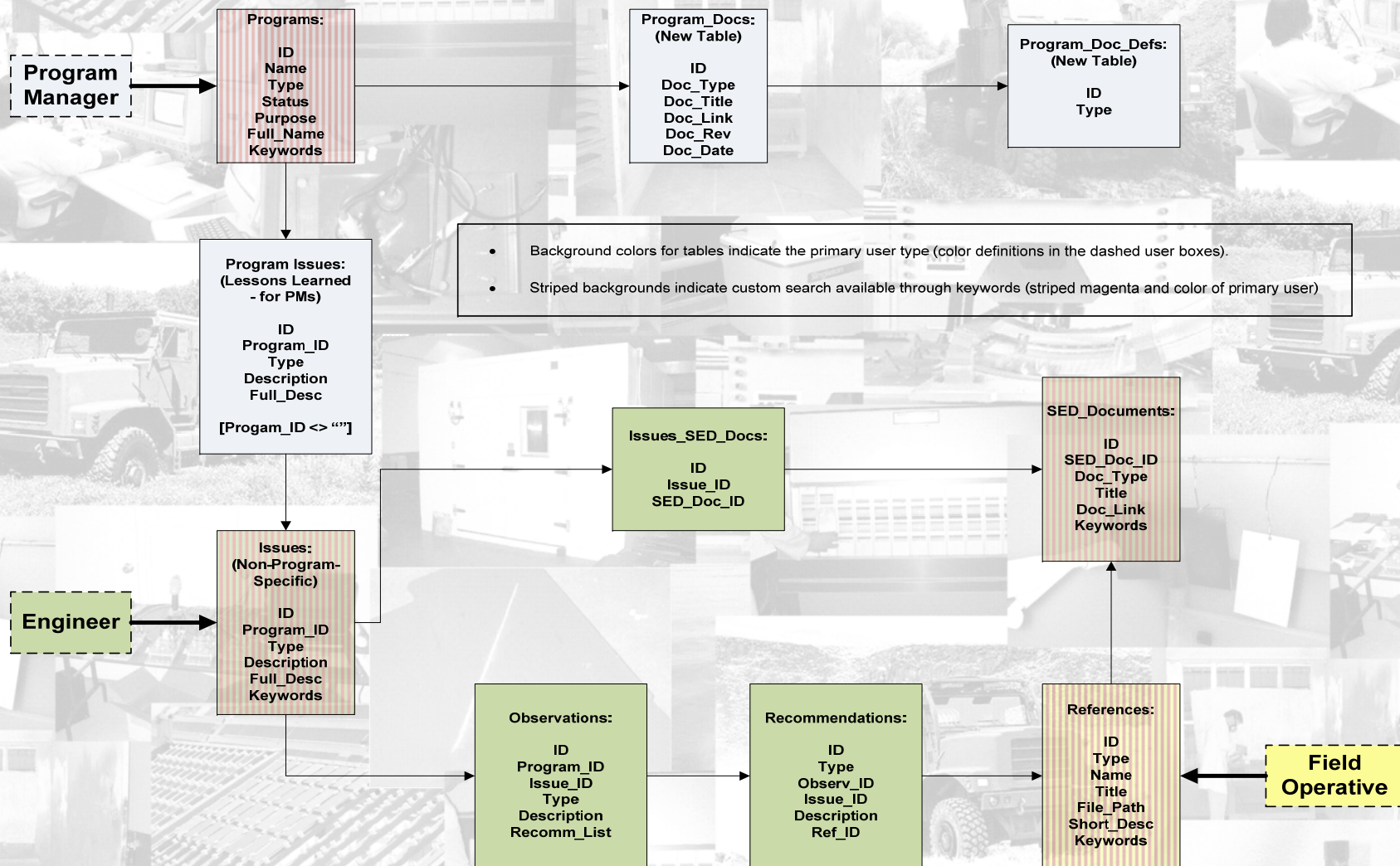
Field  
Test  
Plan

Field  
Test  
Results

Specifications  
&  
Standards



# Implementation Overview



# Acquisition Program Based Searches



- Program-based search is targeted to Program Managers (but may also be used by Engineers)
- Keyword search capability to be added to the screen at the right
- Organized by categories to allow PMs to search for work done on similar platforms
- Clicking one of the category links brings up a screen with all programs assigned to the selected category

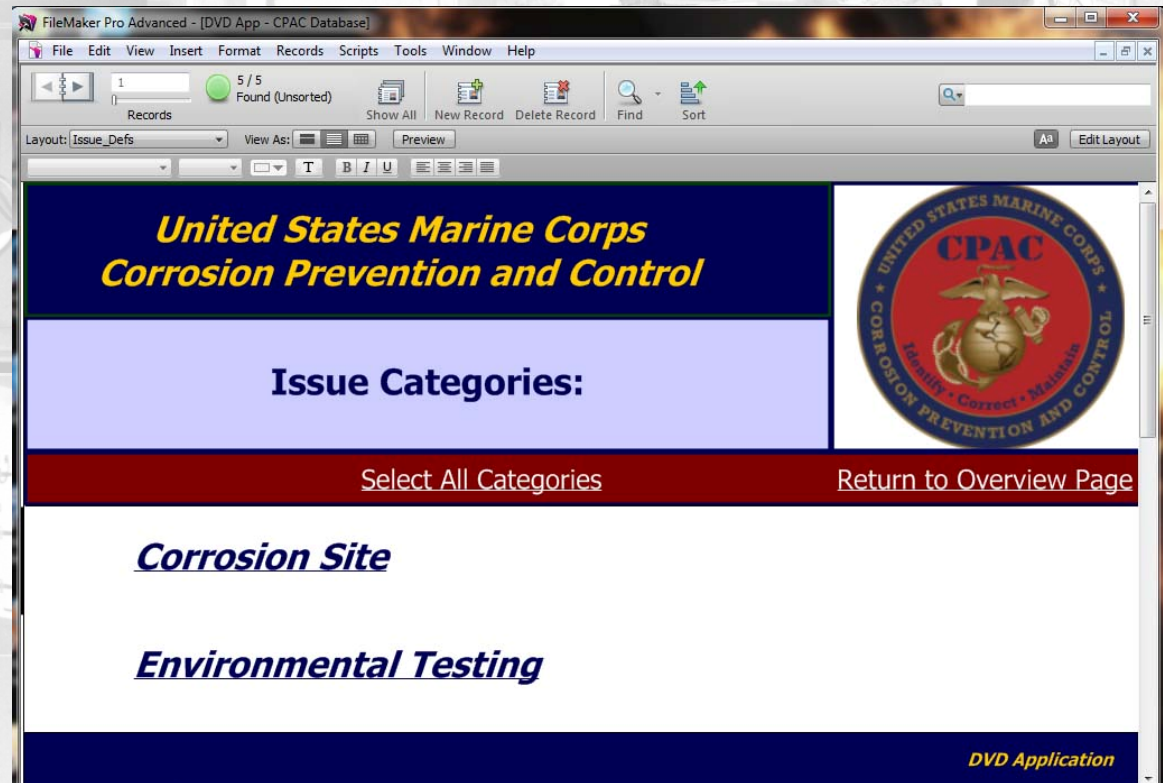




# Corrosion Issue Based Searches



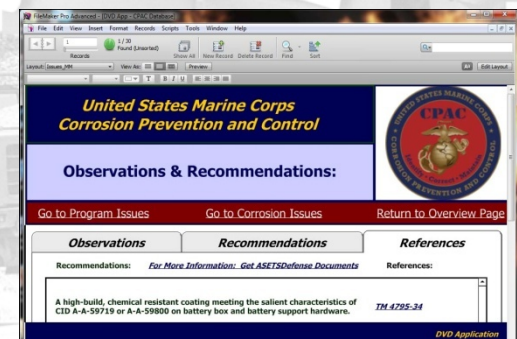
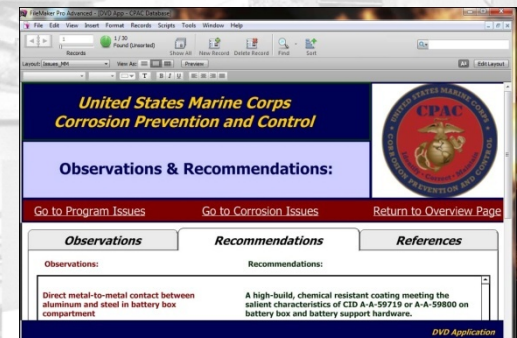
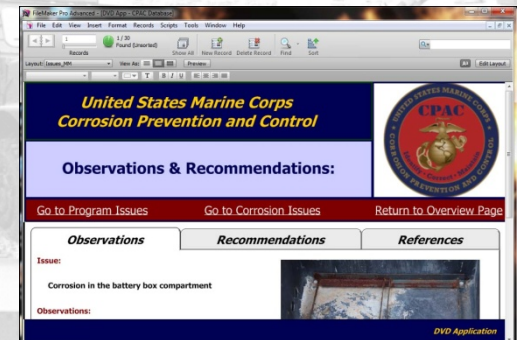
- Issue-based search is targeted to Engineers (but may also be used by Program Managers )
- Keyword search capability to be added to the screen at the right
- Organized by categories to allow Engineers to search across platforms
- Clicking one of the category links brings up a screen with all corrosion issues assigned to the selected category



# Observations & Recommendations



- Uses a tab control to show the CPAC Observations, Recommendations and supporting References related to the selected issue
- The Observations tab states the issue, CPAC observations related to the issue, and a picture of the issue
- The Recommendations tab shows the next step in the evaluation process, relating the Observation to the CPAC Recommendation
- The References tab relates the CPAC Recommendation to the supporting documentation (References)
- The Reference tab also provides the opportunity for additional information by providing link(s) to the reference(s) cited, and a link to additional information from the ASETSDefense website

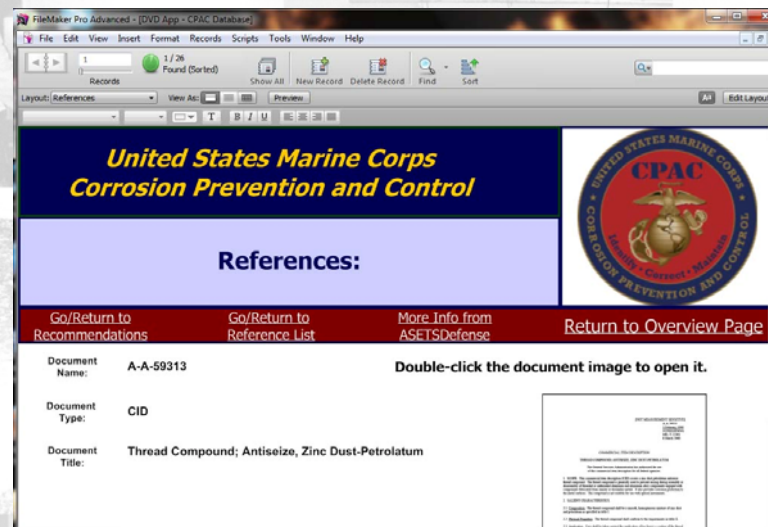
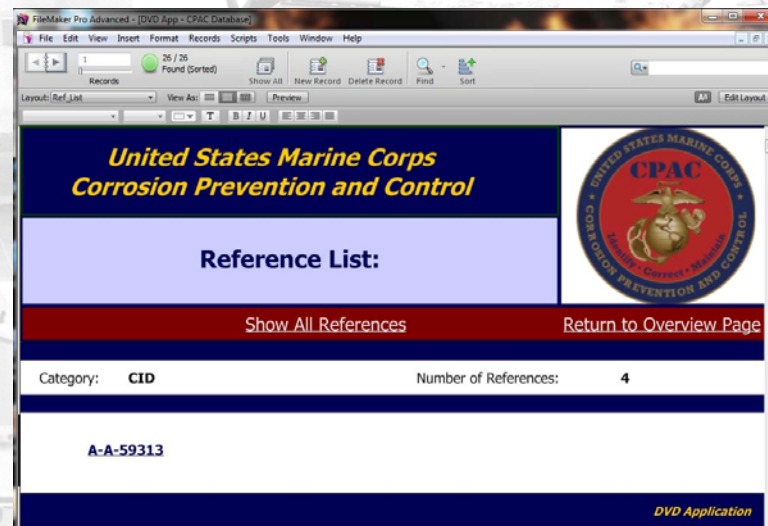






# References

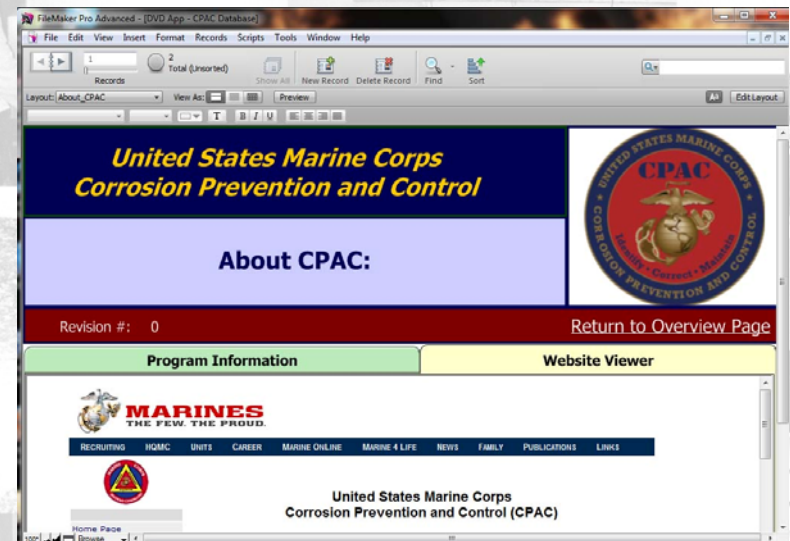
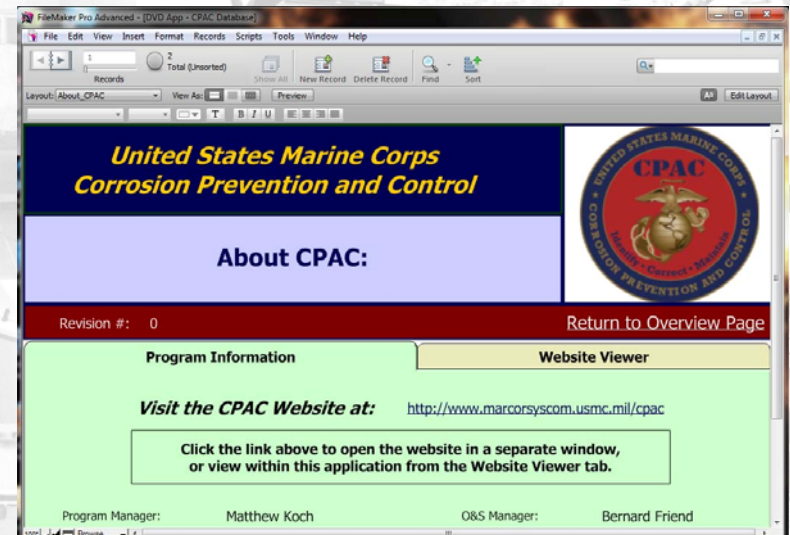
- Selecting “References” from the Main Page provides a list of available references, sorted by reference type (MIL-SPEC, CID, etc.)
- Clicking a reference sends the user to the References page, where the basics of the document are given, together with an image of the document
- The document image can be double-clicked to bring up the document in its associated program (Adobe Acrobat for .pdf, for example)
- Clicking the “More Info from ASETSDefense” link sends the user to pages where related Surface Engineering Database (SED) documents are presented



# About CPAC



- Contains a tab control with program information on the first tab and a CPAC website viewer on the second tab
- The Program Information tab contains POCs with phone numbers and email links, and a link to open the CPAC website in a separate window
- Email links to be functional only with the approval of those represented – currently configured to email myself (for testing purposes)
- The web viewer on the second tab is fully interactive, as it launches the website in the user's default browser. In this case, the browser is contained within the tab, rather than as a separate window





# Data Entry



- Data entry pages contain tab controls for individual record creation/modification and links to related data entry pages
- Data is entered through a combo box (select from list and/or type data) where applicable, or text boxes
- Fields are tabbed and “Enter”-enabled to allow rapid movement between fields
- Fields indicated as “searchable” can be used to find specific records to modify

Observations Data Entry:

Observation ID: 1 [Return to Overview Page](#)

**Edit Records** | **Edit Records in Other Tables**

Program (Searchable): FSS

Issue Category: Environmental Testing [New Issue Category](#)

Observation Category (Searchable): Application Procedure [New Observation Category](#)

Recommendation Category: Modify Specification [New Recommendation Category](#)

Reference Category: MIL-SPEC [New Reference Category](#)

Issue Description (Searchable): System environmental testing at -25°F resulted in large areas of CARC coating delamination.

Observation Description (Searchable): PS did not specify the use of MIL-DTL-53072. No surface treatment was performed and the primer was incompatible with the CARC topcoat.

Recommendation Description (Searchable): Modify the PS to add direct reference to MIL-DTL-53072C and supply the contractor with supplementary materials (tables and flow charts) to assist with compliance.

Reference (Searchable): MIL-DTL-53072

Program\_ID: 1 Issue\_ID: 1 Observ\_ID: 1 **DVD Application**

Observations Data Entry:

Observation ID: 1 [Return to Overview Page](#)

**Edit Records** | **Edit Records in Other Tables**

[Add/Edit: Program Records](#)

[Add/Edit: Issue Records](#)

[Add/Edit: Recommendation Records](#)

[Add/Edit: Reference Records](#)

[Add/Edit: Multi Media Records](#)

Program\_ID: 1 Issue\_ID: 1 Observ\_ID: 1 **DVD Application**

# Future Work



- **Database Integration:**

- Contract with Rowan Technologies signed and work has begun on joining the ASETSDefense and CPAC databases
- Investigating the implementation of a mutual SharePoint site for document storage and search algorithms. Security of restricted distribution documents is an implementation factor.
- Potential future integration with the Granta Coatings Database and/or USMC or DoD databases

- **Security:**

- SED records to be flagged as to whether to be available for SED public search, CPAC private search or both
- User groups to be created for combined CPAC and SED database to restrict access
- Custom user privileges to be assigned where user group security is insufficient for a given user
  - Implemented through username / password combinations

- **Testing:**

- Current CPAC interface has been tested to function as intended
- Extensive testing to “break” the code has not been performed (still in development phase)
- Appropriate error handling will be added based upon the results of code breaking

- **Maintenance:**

- CPAC database to be maintained on Rowan (or hosted) server for logistical reasons
- CPAC to have full access to perform data and security maintenance, as required